

Y10 MYP Maths

Plotting Quadratic Functions (without Technology)

Plotting graphs is an important part mathematics. Graphs illustrate the behaviour of a functions or relationship, and we can use graphs to solve equations and/or problems.

You need to be comfortable in plotting quadratic functions.

For example – Plot the graph of $y = x^2 - x - 6$

Step 1. We start by constructing a table of values of y , for various convenient values of x . For this example, it is a good idea to complete the following table:

x	-4	-3	-2	-1	0	1	2	3	4
y									

Step 2. Fill in the cells in by using the various values of x in the equation for y .

Eg, when $x = 4$, $y = 4^2 - 4 - 6 = 16 - 10 = 6$

x	-4	-3	-2	-1	0	1	2	3	4
y									6

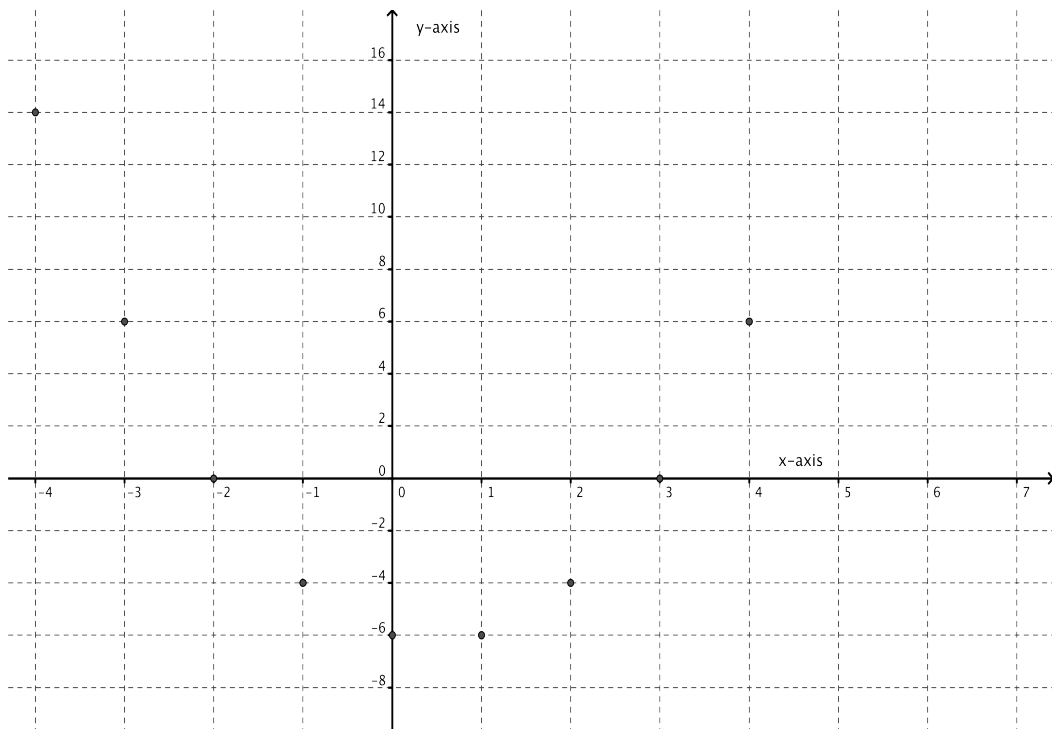
Fill in the rest of the cells.

In this example, we get:

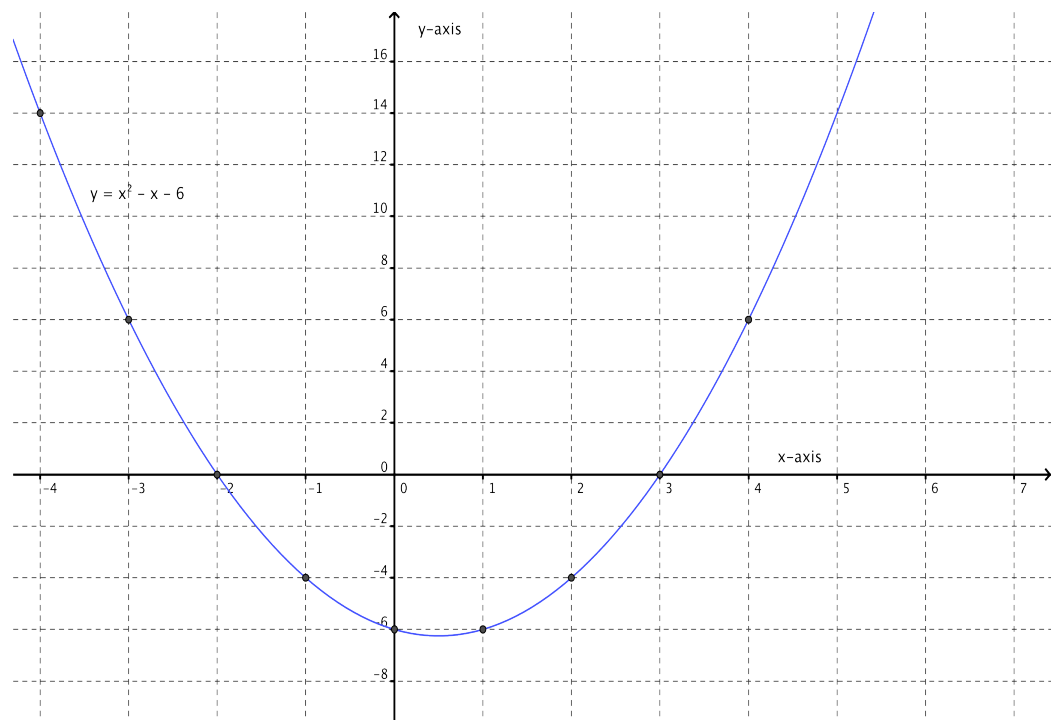
x	-4	-3	-2	-1	0	1	2	3	4
y	14	6	0	-4	-6	-6	-4	0	6

When this is done, every vertical x , y pair gives us an (x, y) point to plot.

Step 3. Plot, accurately, each of these points. Make sure the axes of the graph are drawn correctly, and that you are using a scale that forces you to use as much of the graph paper as possible..



Step 4. Join the points together with the smoothest curve you can. Label the curve (with its equation). The curve you have drawn has a special name – it is a **parabola**.



Plot the following graphs:

- (a) $y = x^2 + x - 3$ (b) $y = x^2 - x - 1$ (c) $y = -x^2 - 2x + 2$ (d) $y = 2x^2 + x - 2$